FLORIDA
PUBLIC SERVICE COMMISSION

NATURAL GAS PIPELINE
ANNUAL
SAFETY REPORT

2017

DIVISION OF ENGINEERING

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NATURAL GAS PIPELINE SAFETY

Gas Safety Background

The federal government establishes minimum pipeline safety performance standards under the United States (U.S.) Code of Federal Regulations (CFR), Title 49 "Transportation," Parts 190, 191, 192, and 199. The Office of Pipeline Safety, within the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA), has overall regulatory responsibility for hazardous liquid and gas pipelines in the U.S. PHMSA's goal is to improve industry performance and communications to prevent hazardous material transportation incidents, accidents, injuries, and fatalities. PHMSA tracks data on the frequency of failures, incidents, and accidents. PHMSA pipeline safety regulations assure safety in design, construction, inspection, testing, operation, and maintenance of pipeline facilities and in the siting, construction, operation, and maintenance of facilities. Additionally, PHMSA sets out parameters for administering the pipeline safety program.

The Florida Public Service Commission (FPSC or Commission) is certified through PHMSA to inspect intrastate transmission and distribution pipelines. Chapter 368, Florida Statutes, authorizes the FPSC to inspect pipelines and adopt rules for governing pipeline safety. The FPSC has adopted the federal standards as well as more stringent regulations found in Chapter 25-12, Florida Administrative Code (F.A.C.). PHMSA authorizes state agencies, such as the FPSC, to conduct oversight and enforcement of pipeline operators through PHMSA's State Pipeline Safety Program.[1]

At the March 5, 1984 Internal Affairs the FPSC voted to require staff to prepare an annual summary report of the previous year's natural gas pipeline safety activities. Any questions concerning this report should be directed to:

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Division of Engineering
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850
Email: rmoses@psc.state.fl.us

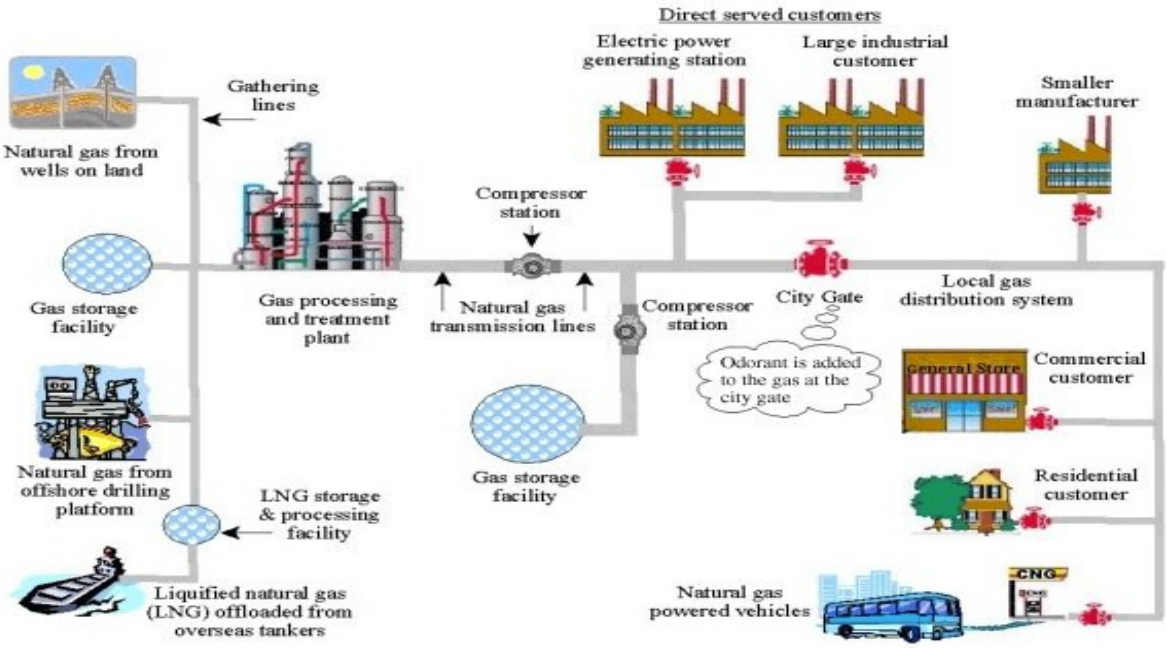
[1] Federal Statutes provide for state assumption of all or part of the intrastate regulatory and enforcement responsibility of utility companies through annual certifications and agreements issued under this program.

Gas Safety 2017 Overview

The FPSC evaluates transmission and distribution pipeline and sub metered master meter locations to ensure that construction, repairs, and maintenance are performed in accordance with specific test procedures using proper materials. The diagram of natural gas flow illustrated below provides a view of the various stages of the deliverance of natural gas from the wellhead to the consumer. Consumers vary from large industrial plants, such as electric generating stations, to the single-family household.

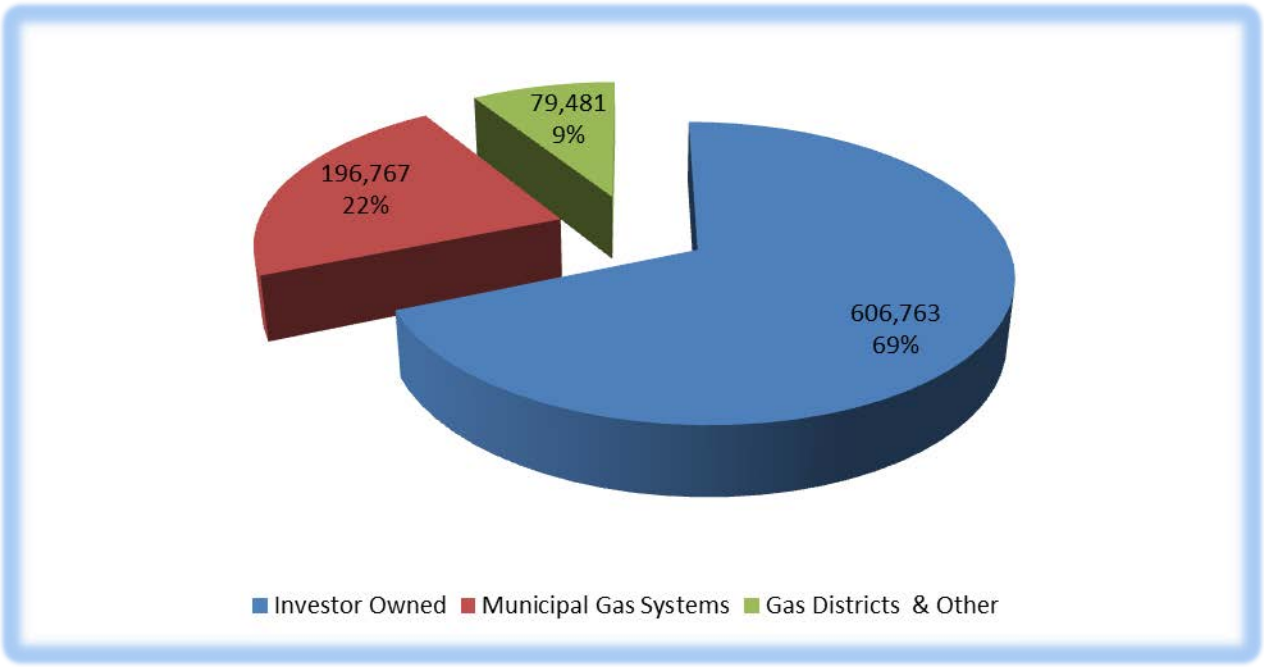
Florida is not a producer of natural gas at this time. Florida relies on gas delivered by high-pressure interstate pipelines from other states. The interstate transmission pipelines use compressor stations to maintain the appropriate pressure of the gas. The gas is distributed to large end users like power generation plants by lateral lines branching off the transmission lines. From the transmission lines, gas is delivered to city gate stations that reduce the pressure for the distribution systems. The pressure is further reduced by regulator stations located within the distribution systems. If a consumer's appliances require further reduction in gas pressure, a regulator is installed at the consumer's location.

Figure 1: Diagram of Natural Gas Flow



There were 42 gas distribution companies and 16 transmission companies operating 99 systems in Florida as of December 31, 2017. These systems are comprised of more than 43,000 miles of pipelines. Figure 2 below shows the total number of customers by utility type providing the service.

Figure 2: Number of Customers by Utility Type as of December 31, 2017



A major aspect of compliance with state and federal regulations involves regular inspections of pipeline facilities. Safety, reliability, and service monitoring promotes an uninterrupted supply of natural gas service to the public and confirms that such services are provided in a reasonable and timely manner with minimal risks. Every gas system operating in Florida is evaluated by the FPSC on an annual basis to insure the operator is in compliance with both the federal standards and state rules.

Gas Safety Inspector Duties and Training Requirements

The FPSC safety staff has nine inspectors who conduct on-going inspections and review the safety operations of Florida's 99 natural gas systems. All FPSC inspectors must complete extensive training through PHMSA to be fully qualified to perform safety inspections. The following are the mandatory Safety Evaluation of Gas Pipeline and Systems courses:

- Safety Evaluation of Gas Pipeline Systems
- Gas Pressure Regulation & Overpressure Protection
- Plastic & Composite Materials
- Welding & Welding Inspection of Pipeline Materials
- Pipeline Failure Investigation Techniques
- Corrosion Control of Pipeline Systems
- Pipeline Safety Regulation Application & Compliance Procedures

Transmission Integrity Management Program

The Gas Transmission Integrity Management Program (TIMP) was introduced by the Federal Pipeline Safety Improvement Act in 2002. This regulation required a pipeline operator to develop an Integrity Management Program for gas transmission pipelines located in areas where a leak or rupture could cause the most harm, such as high consequence areas. The rule applies to gas transmission operators jurisdictional to 49 CFR Part 192 and this rule became effective February 14, 2004. The objectives are to improve pipeline safety through:

- Accelerating the integrity assessment of pipelines in high consequence areas
- Improving integrity management systems within companies
- Improving the role in reviewing the adequacy of integrity programs and plans
- Providing increased public assurance in pipeline safety

An operator of a gas transmission pipeline is required to perform ongoing assessment of the pipeline's integrity. This is done by performing a risk analysis to identify and mathematically rank all threats that could be detrimental to the integrity of the pipeline. There are many key elements included in the written plan, some of which include identification of all high consequence areas, baseline assessment plan, and identification of threats to each covered segment. The rules governing the Gas Transmission Pipeline Integrity Management Program can be found in 49 CFR, Part 192, Subpart O.

Distribution Integrity Management Program

As mentioned above, PHMSA implemented integrity management regulations that became law when Congress passed the Pipeline Safety Improvement Act in 2002 for hazardous liquid and gas transmission pipelines. Congress and other stakeholders expressed interest in understanding the nature of similarly focused requirements for gas distribution pipelines. Significant differences in system design and local conditions affecting distribution pipeline safety ruled out the possibility of applying the same tools and practices used for transmission pipeline systems. Therefore, PHMSA took a slightly different approach for distribution integrity management, following a joint effort involving PHMSA, the gas distribution industry, representatives of the public, and the National Association of Pipeline Safety Representatives (NAPSR) to explore potential approaches.

The final rules establishing integrity management requirements for gas distribution pipeline systems were issued December 4, 2009 (CFR Part 192 Subpart P), with an effective date of February 12, 2010. Operators were given until August 2, 2011, to write and implement their program. The regulation requires operators, such as natural gas distribution companies to develop, write, and implement a Distribution Integrity Management Program (DIMP) with the following elements:

- Knowledge
- Identify Threats
- Evaluate and Rank Risks
- Identify and Implement Measures to Address Risks
- Measure Performance, Monitor Results, and Evaluate Effectiveness
- Periodically Evaluate and Improve Program
- Report Results

Other Responsibilities

The FPSC Bureau of Safety also supports and assists the state's Emergency Operations Center in all energy related issues, such as energy security, natural gas incidents, natural disasters, and when any utility related threat is detected that threatens life and/or property. Several FPSC employees with the Division of Engineering are also members of the State Emergency Response Team.[2] Their assistance requires regular involvement supplying expert advice during an emergency and coordinating activities of the gas and electric utilities, jointly with government, fire, police, and other public and private agencies. Training exercises and safety drills are held throughout the year to keep members current on existing and upcoming procedures relating to the operations of the Emergency Operations Center and to ensure preparedness should an emergency arise.

Inspection Results

As each gas system is evaluated, the inspector prepares a summary of the findings and discusses the results with the system operator's supervisory employees. The information is forwarded to the Bureau of Safety, where a letter is prepared and issued to an officer of the company. When violations are found, a non-compliance letter is issued to the operator. This letter details the issue(s) found and informs the operator of the date (usually 30 days) in which their response to the issue(s) is required. During 2017, there were 48 total violations with 56 percent attributed to PHMSA regulations and 44 percent to FPSC regulations.

During 2017, the average number of days between a violation notice being issued and the date the violation closed was 103 days. The average company response time from issuance of the violation notice to their response was 26 days. The companies are typically given 30 days to respond to a violation notice; however, the situation often varies due to the nature of the problem and difficulty in getting the violation corrected.

There were 22 compliance actions during 2017. All violations have been corrected or are scheduled for corrective action pursuant to the FPSC's enforcement procedures. The violations that have not been corrected by the end of the year are carried over into the following year.

Safety Improvement Actions

The highest cause of damage to pipelines is by excavation dig-ins. Each time staff is notified of a pipeline incident, 811 locate ticket information is requested to determine if the pipeline was properly marked. This action resulted in one violation notice of a mismarked pipeline in 2017. In this instance, the main was properly marked but a service line was not marked and was hit. Operators are encouraged to improve training for personnel responsible for marking pipelines.

Another activity conducted by staff is to review unaccounted for gas that is reported on each operator's annual report. Where the unaccounted for gas percentage was higher than normal, staff contacted the operators to determine the causes. In one instance, it was found that the meter measuring gas at the transmission pipeline was measuring low. When compared to what the distribution operator measured as sold gas, it indicated a high percentage of unaccounted for gas. However, this was only a measuring

[2] State Emergency Response Team provides updated information to other agencies and the public, during any emergency.

error and not due to leaks. Another operator found it had an employee that was not correctly reading meters. As a result, the utility has initiated the process of checking every meter for accuracy.

Natural Gas Bare Steel and Cast Iron Pipe Replacement

As discussed above, each distribution operator is required to maintain a Distribution Integrity Management Program (DIMP). Staff inspects the DIMP each year to ensure it is updated for any changes in threats to the pipeline that may cause operational changes to protect the pipeline. An example is to replace a pipeline that is found to have excessive leakage history or made of outdated material.

Cast iron pipe is subject to graphitic softening or "graphitization" and bare steel is subject to corrosion. Both hazards can lead to structural failure and the release of gas. Gas utilities have been urged by PHMSA to replace these older facilities as a safety measure. In August 2012, the FPSC approved cast iron/bare steel pipe replacement riders for three natural gas utilities, TECO Peoples Gas System, Florida Public Utilities, and the Florida Division of Chesapeake Utilities (Central Florida Gas). Under the approved pipeline replacement program, these three utilities will replace 917 miles of cast iron and bare steel distribution pipe and 8,052 service lines within a 10-year period. As the result of several meetings with Pensacola Energy, in March 2011, Pensacola Energy voluntarily established a pipeline replacement program to replace its cast iron and bare steel pipelines. Table 1 below summarizes the progress of the four utilities. For 2018, the monthly bill impacts for a residential customer that uses 20 therms per month, is $1.06 for TECO Peoples Gas System customers, $4.88 for Florida Public Utilities customers and $2.37 for customers of the Florida Division of Chesapeake Utilities Corporation. As a result of these programs, 769.9 total miles of pipeline have been replaced.

Table 1: Pipeline Replacement Program

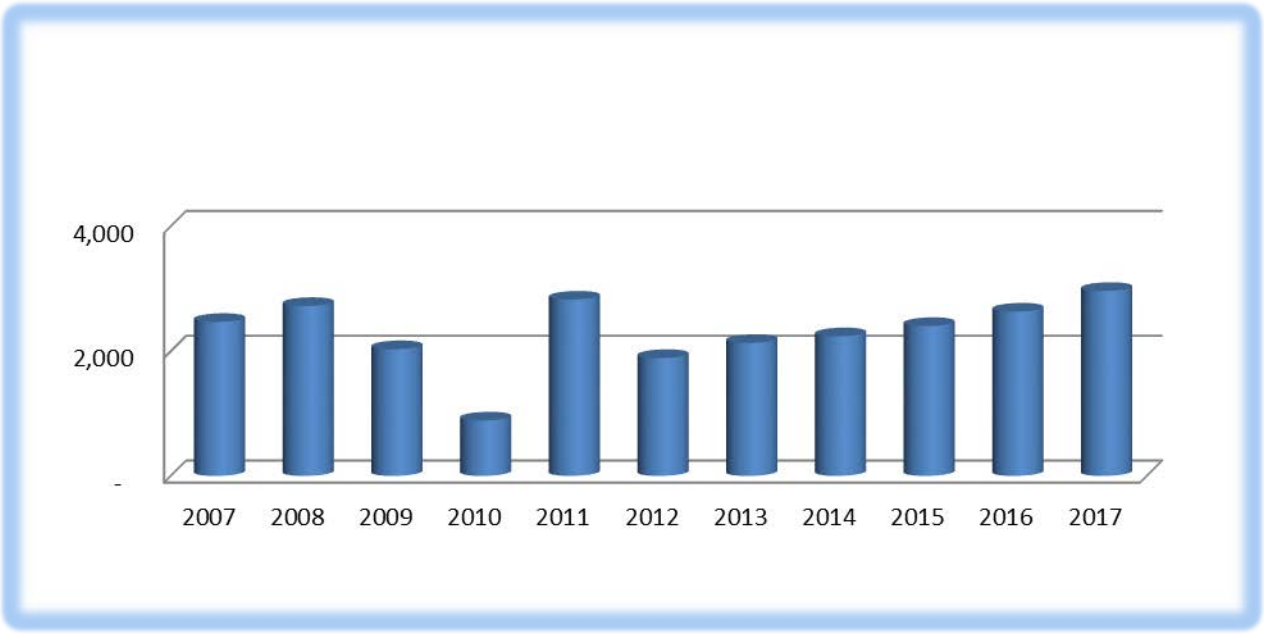
Company Name	Total Miles of Bare Steel (BS) Pipe Needing Replacement as of September 2012	Total Miles of Cast Iron Pipe (CIP) Needing Replacement as of September 2012	Remaining BS Mileage as of December 31, 2017	Remaining CIP Mileage as of December 31, 2017	Total Miles of BS and CIP Replaced as of December 31, 2017
Chesapeake Utilities* (Central Florida Gas)	152	0	43.3	0	108.7
Pensacola Energy	469	88	315.5	75.1	166.4
Florida Public Utilities	197	1	64.2	.3	133.5
TECO Peoples Gas	411	156	177.2	28.5	361.3
TOTALS	**1229**	**245**	**600.2**	**103.9**	**769.9**

*Chesapeake Utilities is the parent company of Central Florida Gas and Florida Public Utilities.

Prevention of Damage to Gas Pipelines by Excavators

One of the highest causes of damage to natural gas pipelines in Florida, and the number one cause in the entire United States, is dig-ins (pipelines cut or damaged by others engaged in excavation activities or directional drilling). Underground utilities can sustain damages from just a small nick of the outer lining of the buried facilities, causing leaks, water intrusion, or corrosion. Figure 3 below shows the number of natural gas leaks per year resulting from dig-ins.

Figure 3: Number of Leaks Due to Natural Gas Dig-Ins from 2007-2017



Data source: PHMSA Annual Reports.

Chapter 556, Florida Statutes, is the Underground Facility Damage Prevention and Safety Act that requires anyone that will be digging to call 811 first, so underground utility lines can be located and marked. Sunshine State One Call of Florida (SSOCOF or Sunshine 811) is Florida's one-call center whose responsibility is to help prevent damages to underground utilities. For the excavator, calling 811 helps prevent hefty fines and repair costs due to utility service outages, injuries, environmental contamination, and property damage. Violation penalties can range from $500 to $5,000.

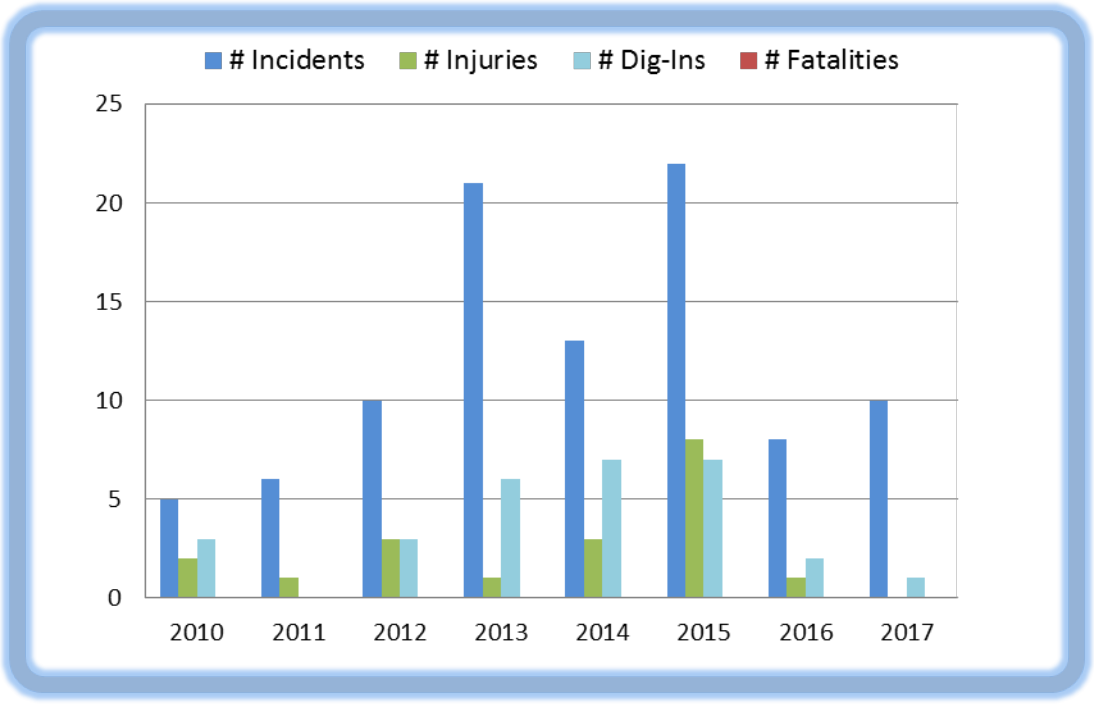
Sunshine State One Call of Florida is part of Common Ground Alliance (CGA). CGA is a member-driven association dedicated to ensuring public safety, environmental protection, and the integrity of services by promoting effective damage prevention practices. In recent years, the association has established itself as the leading organization in an effort to reduce damages to all underground facilities in North America through shared responsibility among all stakeholders. Other excavation damage prevention organizations can be found at http://www.commongroundalliance.com. While the FPSC does not have direct responsiblity for preventing excavation damage, the FPSC does provide call before you dig reminders on our website and brochures.

In the state of Florida, natural gas accidents and outages are reported to the FPSC in accordance with Commission Rule 25-12.084 F.A.C. The FPSC defines a reportable incident as an event that:

a) Caused a death or a personal injury requiring hospitalization.
b) Required the taking of any segment of transmission pipeline out of service.
c) Resulted in gas igniting.
d) Caused an estimated damage to the property of the operator, or others, or both, of a total of $10,000 or more.
e) In the judgement of the operator, was significant even though it did not meet the criteria of subsection (a), (b), (c), or (d).
f) Any accident or failure which interrupts service to either 10 percent or more of its meters or 500 or more meters.

As shown in Figure 4 below, Florida had ten reportable incidents with zero injuries and zero fatalities in 2017. There has not been a natural gas related fatality in Florida since 2007.

Figure 4: FPSC Reportable Incidents 2010-2017

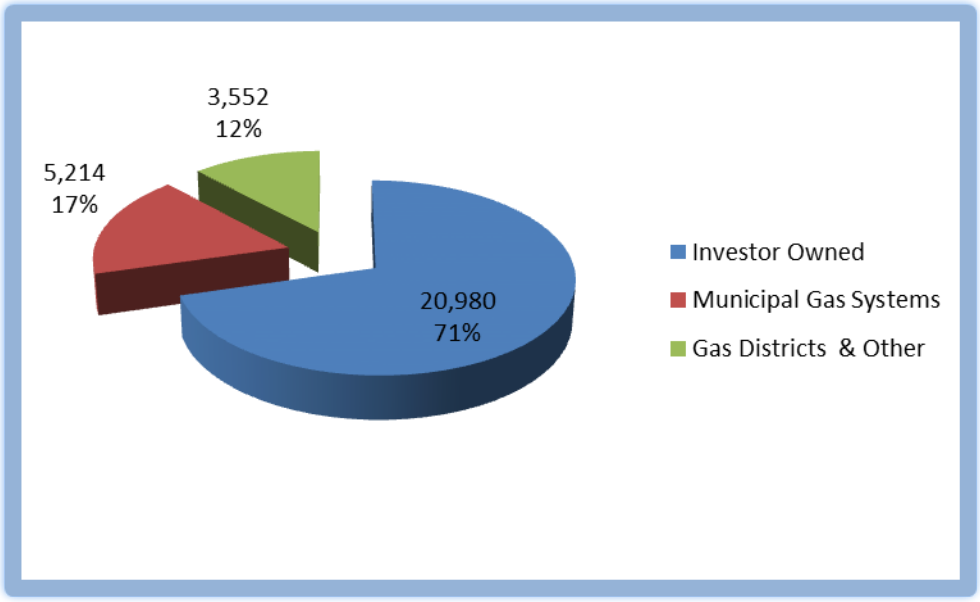


Excess Flow Valves

An excess flow valve (EFV) is a safety device designed to automatically shut off the flow of natural gas through a piping service line if it ruptures, thereby mitigating the impact of the rupture. In general, EFVs are an added optional safety device that has no effect on the gas flow resulting from a small leak, such as a leak caused by corrosion or a small crack. EFVs do not prevent accidents; instead, they help mitigate the consequences of accidents where there has been a substantial or catastrophic line break. Where installed, EFVs are complementary to damage prevention programs, one-call systems, and other pipeline safety efforts that focus on preventing accidents caused by outside forces.

EFVs became a reportable item during calendar year 2011; however, operators had until 2012 to do an inventory and provide accurate numbers of EFVs placed during the calendar year and balance at the end of the year. Effective 2012, the FPSC began to closely monitor the installation of EFVs to insure proactive responses by the gas operators. Figure 5 below shows the number of EFV's each utility type installed in 2017.

Figure 5: Excess Flow Valves Installed in 2017



Conclusion

Consumer safety remains the top priority of the FPSC gas safety program. Once again, there were no Florida fatalities caused by natural gas in 2017. In 2016, staff issued 110 violations and in 2017, staff issued 48 violations. The reduction is primarily due to the inspectors and gas companies working together to implement practices that meet the regulations more efficiently.

The FPSC is continuing the replacement programs for unprotected steel and cast iron pipe. Since September 2012, 769.9 miles of pipeline have been replaced with newer materials such as coated cathodically protected pipeline and polyethylene plastic. Replacing these older types of pipeline reduces the possibility of failures due to the age and outdated materials. Finally, the increased installation of EFV's will help mitigate the impact of any rupture on single service line residential customers.